

Application No.: 10/564,985
Amendment under 37 CFR 1.111
Reply to Office Action dated December 28, 2007
March 26, 2008

AMENDMENTS TO THE SPECIFICATION

Please substitute the paragraph beginning at page 61, line 2 and ending at page 62, line 8 to read as follows:

-- The present invention provides a process for producing an optically active phosphorus heterocyclic dimer including reacting, in the presence of a base, ~~Primary~~ primary phosphine represented by formula (1):

~~{Chem. 1}~~

R-PH₂ (1)

~~{wherein R represents a linear, branched, or cyclic alkyl group having 2 to 20 carbon atoms}~~ is reacted with a compound represented by formula (2):

~~{Chem. 2}~~

Y-C_nH_{2n}-Y (2)

~~{wherein Y represents a halogen atom or a leaving group selected from OTs, OTf, and OMs, and n represents a number of 3 to 6}~~ in the presence of a base; the product is reacted with boron

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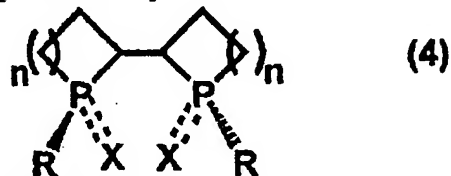
trihydride, oxygen, or sulfur to obtain a phosphorus heterocyclic compound represented by formula (3):

~~{Chem. 3}~~



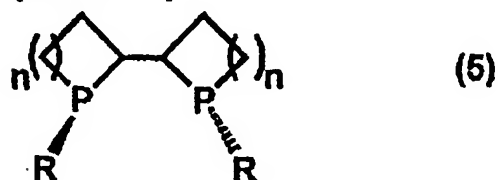
~~(wherein R represents the same as the above, n represents a number of 1 to 4, X represents a boron trihydride group, an oxygen atom, or a sulfur atom, and — represents a single bond when X is a boron trihydride group or a double bond when X is an oxygen atom or sulfur atom); the resultant compound is dimerized to produce a phosphorus heterocyclic dimer represented by formula (4):~~

~~{Chem. 4}~~



~~(wherein R, n, and X represent the same as the above); and then oxygen, sulfur, or borane is removed from the resultant phosphorus heterocyclic dimer to obtain an optically active phosphorus heterocyclic dimer represented by formula (5):~~

~~{Chem. 5}~~



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~~(wherein R and n represent the same as the above).~~ --